UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,806	02/20/2004	Jin Cao	Cao 2-2-6	7173

22046   7590   11/10/2008
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EXAMINER
OSBORNE, LUKE R

ART UNIT	PAPER NUMBER
2123	

MAIL DATE	DELIVERY MODE
11/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 July 2008</u>.
2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-12</u> is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☒ Claim(s) <u>7-12</u> is/are allowed.
6)☒ Claim(s) <u>1-6</u> is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All   b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.
4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.
5)☐ Notice of Informal Patent Application
6)☐ Other: _____.

DETAILED ACTION

Claim Status

1.   Claims 1-12 are pending in the instant application.

Claims 1-6, are rejected.
Claims 7-12 are allowed.

Incorporation by Reference

2.   The attempt to incorporate subject matter into this application by reference to the article, entitled "A Statistical Model For Allocating Bandwidth To Best-Effort Internet Traffic," 2004 [In Preparation] on page 3 of Applicant's specification is ineffective because the referenced documents are not clearly identified as required by 37 CFR 1.57(b)(2)).

The incorporation by reference will not be effective until correction is made to comply with 37 CFR 1.57(b), (c), or (d). If the incorporated material is relied upon to meet any outstanding objection, rejection, or other requirement imposed by the Office, the correction must be made within any time period set by the Office for responding to the objection, rejection, or other requirement for the incorporation to be effective. Compliance will not be held in abeyance with respect to responding to the objection, rejection, or other requirement for the incorporation to be effective. In no case may the correction be made later than the close of prosecution as defined in 37 CFR 1.114(b), or abandonment of the application, whichever occurs earlier.

Any correction inserting material by amendment that was previously incorporated by reference must be accompanied by a statement that the material being inserted is

the material incorporated by reference and the amendment contains no new matter. 37

CFR 1.57(f).

Claim Objections

3.   Examiner acknowledges the cancellation of claims 13-18. Consequently the

objection is withdrawn.

Claim Rejections - 35 USC § 112

4.   Examiner acknowledges the cancellation of claims 13-18. Consequently the

rejection is withdrawn.

Claim Rejections - 35 USC § 101

5.   Examiner acknowledges the cancellation of claims 13-18. Consequently the

rejection is withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6.   Claims 1-3, 6 are rejected under 35 U.S.C. 102(b) as being anticapted by U.S.

Patent No. 5812526 to Chang et al., hereinafter "Chang".

Regarding claim 1 Chang discloses a method for determining a bandwidth required for meeting one or more quality-of-service ("QoS") criterion on a transmission link [Chang: Source nodes may transmit cells at a fixed bandwidth or a variable bandwidth. Associated with the cells of each communication is a QoS requirement. Each node may have plural queues including one queue for each QoS requirement (Column 7, lines 52-65)] comprising the steps of:

generating a plurality of streams of traffic for the transmission link [Chang: Each queue 110, 120 is for storing cells received from incoming bitstreams for later transmission on one or more outgoing bitstreams (Column 11 line 45 - Column 12 line 6)];

conducting a plurality of simulations of bandwidth for the link, based on generated traffic streams and using systematically varying values of the one or more QoS criterion [Chang: Illustratively, one queue is provided for each different type of QoS accommodated by the node. In FIG. 6, the QoS's are broadly grouped into delay sensitive (such as audio, video or interactive data bearing cells) and delay insensitive (such as transactional data bearing cells) (Column 11 line 45 – Column 12 line 6) In the fuzzy congestion controller 230, the two threshold model is used as a basis to derive the fuzzy logic rule base. Through simulation, the parameters of queue occupancy q, queue occupancy variance .DELTA.q and cell loss probability p.sub.l have been discovered to provide a good basis for determining the "congestiveness" of a specific queue 110 or 120 (FIG. 6) at the node 100 (FIG. 6) (Column 14, lines 6-18)];

developing a model addressed to a relationship between bandwidth and the one

or more QoS criterion based on the simulations [Chang: Below, the fuzzy logic

processing of the fuzzy bandwidth calculator 210, fuzzy admission controller 220 and

fuzzy congestion controller 230 are discussed in greater detail (Column 14, lines 6-8)];

and

applying the developed model to determine bandwidth required to meet the one

or more QoS criterion on a link [Chang: The operation of the fuzzy bandwidth calculator

210 (FIG. 7) (Column 16, lines 58-67)]

wherein the developed model is provided as a function of bandwidth, traffic load,

queuing delay and packet loss

> [Chang: According to ATM, the number of timeslots of specific outgoing bitstreams allocated to carrying cells of each VC varies over time depending on the instantaneous traffic load at that moment at the node. Illustratively, the bandwidth, i.e., bitrate, of each outgoing bitstream is a finite amount such as 155 mbits/sec. In the event that too much traffic, i.e., too many cells are to be transmitted in an outgoing bitstream, than can be accommodated at that moment, congestion is said to occur. In the event of congestion at a node, the node may discard excess cells. Discarded cells may be retransmitted from the source node upon determination that the cells were discarded. Since congestion tends to be a spontaneous and short duration event, the discarding of cells tends to reduce the traffic load (number of cells to be transmitted in a given bitstream at one time) and alleviate the congestion. Consider that some source nodes produce cells at a constant rate while other produce cells at a variable rate which exhibits a mean bitrate and a peak bitrate. Furthermore, the arrival of cells from each source node is somewhat randomly distributed over time. Therefore, congestion is alleviated in spite of the fact that discarded cells are retransmitted from the source node (Column 2, line 55 - Column 3, line 9)].

Regarding claim 2 Chang discloses the method of claim 1 wherein each of the

generated traffic streams has a fixed traffic bit rate and the traffic bit rate varies from

stream to stream

> [Chang: Each of the nodes communicate with each other by transmitting a bitstream to one another via links, which bitstream is organized into fixed length timeslots. Communication is achieved according to the ATM protocol whereby the nodes selectively read fixed length cells

from, and write fixed length cells into, the fixed length timeslots of the bitstream. Source nodes may transmit cells at a fixed bandwidth (Column 7, lines 52-65)].

Regarding claim 3 Chang discloses the method of claim 1 wherein the streams of traffic are organized into packets and the traffic streams are defined by packet arrivals and sizes [Chang: Communication is achieved on the communication network 10 by transmitting a bitstream on the links. The bitstream is organized into fixed length time slots. Each node that desires to communicate writes fixed length packets called "cells" into the timeslots (Column 1, lines 37-47)].

Regarding claim 6. Chang discloses the method of claim 1 wherein the step of conducting plural simulations includes the sub-steps of: choosing a trial bandwidth for a given simulation; and iteratively repeating the simulation with an incremental change in the trial bandwidth until a QoS value realized for the simulation substantially matches a selected QoS criterion

[Chang: In the fuzzy congestion controller 230, the two threshold model is used as a basis to derive the fuzzy logic rule base. Through simulation, the parameters of queue occupancy q, queue occupancy variance .DELTA.q and cell loss probability p.sub.l have been discovered to provide a good basis for determining the "congestiveness" of a specific queue 110 or 120 (FIG. 6) at the node 100 (FIG. 6). In addition, the simulations reveal that the following term sets provide an optimal basis for determining traffic load adjustment: T(q)=[E,F], T[.DELTA.q)=[N, P], T(p.sub.l)=[S, NS] and T(y)=[DS, NC, IS, IM] (Column 14, lines 6-18)].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang in view of "Internet Traffic: Statistical Multiplexing Gains" by Cao et al., published 2/2002 hereinafter "Cao".

Regarding claim 4 Chang teaches the method of claim 1 wherein the traffic streams are generated [Chang: Each queue 110, 120 is for storing cells received from incoming bitstreams for later transmission on one or more outgoing bitstreams. (Column 11 line 45 – Column 12 line 6)].

Chang does not expressly teach that the generated bitstream is generated synthetically based on a statistical model.

Cao teaches generating the bitstream synthetically with a statistical model [Cao: We found that very simple statistical time series models, which we call fractional sum

difference (FSD) models and FSDMA(1) models, provide an excellent fit to the … for the live and synthetic link packet traces (Page 1, right column section III)].

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to combine the bandwidth calculations and modeling of Chang with the statistical model of Cao.

The motivation for doing so would have been to use the simple time series models in the testing of internet traffic [Cao: More broadly, the results show that engineering studies that are meant to apply to the Internet as a whole, and that use synthetic or live packet traffic to assess performance, need to consider packet traces varying across a wide range of magnitudes of statistical multiplexing in order to achieve generality (Page 2, right column, last paragraph)]

Regarding claim 5 Chang in view of Cao teaches the method of claim 4 wherein the statistical model is a Fractional Sum Difference model [Cao: We found that very simple statistical time series models, which we call fractional sum difference (FSD) models and FSDMA(1) models, provide an excellent fit to the … for the live and synthetic link packet traces (Page 1, right column section III)].

Allowable Subject Matter

9.   Claims 7-12 are allowed.

The following is an examiner's statement of reasons for indicating allowable subject matter.

While Cao teaches determining the bandwidth necessary to satisfy a QoS term, and Cao teaches the use of a FAD model neither/none of these reference(s) taken either alone or in combination with the prior art of record disclose where the model takes the form as claimed in claims 7 and 11specifically including:

(claim 7) The specific model as claimed in claims 7

(claim 11) The specific model as claimed in claims 11,

in combination with the remaining elements and features of the claimed invention. It is for these reason that the applicant's invention defines over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicants Argue

Chang does not teach claim 1 as amended.

Examiners Response

The Examiner has considered Applicants arguments and found them unpersuasive. The cited portion of Chang discloses that the Fuzzy controller is developed as a function of bandwidth, traffic load, queuing delay and packet loss.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LUKE OSBORNE whose telephone number is (571)272-

4027. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see http://pair-direct.uspto.gov. Should
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USPTO Customer Service Representative or access to the automated information
system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Luke Osborne/
Examiner, Art Unit 2123

/Paul L Rodriguez/
Supervisory Patent Examiner,
Art Unit 2123